# "Pioneer"

FROM LIVERPOOL.



Arrival of the Iron Ships "Ophelia," "Bordeaux," and "Clan Grant."

## Theo.H.Davies & Co

Have Rec ived by these Vessels And other Late Arrivals, the Following :

### An Asst. of Dry Goods DESCRIPTION OF PART OF

A LABER AND OF DEEDS LOOKS SHAR, In Louisiana, No. 5 at 11 days, Villey

Rubber Coats & Leggings sagar lote luvert sugar.

2. The loss of the begasse as fuel, although it has not, as yet, been fully Horse Blankers. Bed Blankets. All Sizes, Weights, Qualifies and Colors;

Velvet & Tapestry, FEW OF THE NEW STYLE

CENTRE RUGS

Merchant Canvas! BAGS.

Filter Press Bags 22 x 36

Sugar, Rice & Coal Bags

3&5plyTwine AMERICAN FLAGS,

FLOOR OILCLOTHS

Ladies' & Gent's Saddles

A complete him which we are selling Changer than Been.

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Iron Bedsteads. Galvanized Buckets.

Tea Kettles & Sauce Pans

Butcher Knives, Knives & Forks, Tin Plate. Sheet Lead.

WHITE LEAD, various qualities; BOILED OIL, TURPENTINE CORRUGATED ROOFING.

Portland Cement, Fire Clay, Fire Bricks, Both Square and arch; Lump Rock Salt, Fishery Salt,

ENGLISH GROCERIES

AMERICAN GOODS Bleached & Brown Cottons

Shelf HARDWARE

Tested Chain.

Best Welsh Steam Coal

REPORT ON SUGAR MANUFACTURE.

To the Planters' Labor and Supply Company:

GAZETTE SUPPLEMENT,

There are very few lines of business where such a large amount of capital is invested that have made as slow progress towards perfection as the sugar-case business. This is due partly to the fact that the cases growing rigious are located mostly in tropical and semi-enlightened countries; and although the sugar business in these countries are carried on mostly by men from theroughly progressive countries, where they become separated from the thrift, drive, and inventive genius of their mother countries, they are too apt to fall in with the thriftless ways of their adopted country.

This is as true of this country as it is of other tropical sugar countries.

We have, however, under the silmulus and impetus given the sugar business here by the Treaty made rapid progress, and greatly improved our sugar machinery, and methods of manufacturing sugar. Still we have much yet to learn, and the science of calsing and manufacturing sugar from the sugar-cane is still in its infancy.

The diffusion process was invented more than forty-two years ago, still it is not a settled question to-day whether it can be applied economically and manufacturing sugar second contents.

and succe-study to cane-

The uncernian process was invented and adopted years ago, and although several of the planters here are thoroughly satisfied that double crashing will pay, and are adding two-roller mills to their three-roller mills, still it has not, as yet, been demonstrated to their satisfaction that it will pay for them to adopt the materiation process—that is, the use of water to saturate the begasse in its passage from the three-roller to the two-roller mill.

We find, however, that even in countries where mageration mills have less a cool for years that there is a difference of opinion on this subject.

The increase in the consumption of sugar in the United Kingdom from 15.2 per cent. In 1889 in 71.7 per cent. in 1883 means that the use of sugar has granually possed from being a laxury to that of a necessity of life, and, as with all necessities of life, competition in this business has

become simpened brief, and profits are cut down to a fine figure.
It behaves us, therefore, to study carefully into all the new methods and improvements, and aim at thorough economy in all the branches of The materation and diffusion processes are now receiving a thorough

The and though we would seem have this problem solved. Mixed Flannel the experiments will be made in regard to diffusion next grinding season.

> In. Sadin writes that three diffusion batteries are being put up in described and Cortes Louisinear by the Government, but adds, "I have made up my mind that it to be a superior of the cortes of t can powels, that solutions is not popular here at present." The theory is accepted as a good one, but there is no faith in its economical adoption as a cause

process. The objections to this system as applied to came are:

L. The reduction in the density of the juice from 1° to 1 1° B., as from 16 to 20 per cont. of water is suided to the juice; this necessitates more: lime, long boiling, and subjection to heat, which converts crystalizable

demonstrated to our satisfaction that it might not be made of some use as

on the other hand, the advantages of diffusion are—the extraction of within 4 or 5 percent, of the schul amount of sacharine juice in the case: within 4 or | percent, of the whole amount could be extracted, t & Tapestry, but sugar infinities seem to agree that it does not juy to extract that amount. Again, the diffusion julee comes from the battery clear and transparent, consequently there is no loss in skimmings as there is when

Experiments have been made with diffusing the begasse. Judge Hart, of Kohala, who has been studying up the subject, feels sauguine that the begasse from our mills can be successfully diffused, and then by passing it through another mill be sufficiently dried to be used as fuel. He haonds to make experiments with a diffusion battery on his plantation, we

Professor Wiley speaks favorably of the large percentage of julie to be obtained by this method; but he also says that the begave must be cut up into sand pieces before it is subjected to diffusion. If so, it is a ques-tion whether it will be of much value as fuel after passing through this

process.

It is out of the question for us to put the begasse, after it has been subected to diffusion, into trash-houses, soaked with water, to curs—it will never curs. Nor will it ever be of much use to put late the rind ground

value as the toward in the expense of an extra min, and the extra fuel messary to run it? This seems distint.

Until it can be shown that the begasse can be used for fuel, and to advantage, after it has passed through the diffusion process, Hawallan planters can do no better than adopt the mechanion process, or at least double crushing. This we can easily demonstrate. Double crushing on those islands are obtained from 15 to 77 per cent, of the total place in ripe came, and let. Martin has ascertained by analysis that at Walakou, Hilo, they have abtained by nuceration as high as 87 per cent. But failing the amount obtained by double crushing, 77 per cent., and even this is within 8 per cent of all it would pay to extract by diffusion. Our experience is that, without the use of trash, a ton of coal will manufacture a lon of sugar. This coal is worth from \$10 to \$12 delivered on our plantaus, and with the extra amount which would be necessary in diffusion mountacture a ton of sugar, which would be about 329 lbs., the cost of

H. W. Waley, United States Government Chemist, in his report on diffusion, says: "The experiments in diffusion, I freely admit, are far from using satisfactory?" he hopes, however, to follow out the interestreg problem to success

One thing is certain, Hawaline planters can well afford to let Louisiana Yellow Sheathing Metal, and Nails somes Government, experiment with diffusions, and we can profit by cisco in favor of one grade boilings.

With the Founds of Triple Effect, and the other improvements of the STEEL RAILS, present day in boiling-house marriagery, diffusion has a better opportunity of a fair test than fermenty, when evaporating was done in open pans. The five-roder mill, with potent notomatic trass-feeder, as con-structed by the Honolulu Iron Works, dies excellent work.

The question whether it will pay to use meceration in connection with double grinding is the important one. Data, so far as we have obtained it, seems to show that it cornainly will under certain effective.

Mr. Lidgale made careful experiments with double crushing at Laupuschoe with two three-roller mills, published in the Planteiss' Monthly of January, 1882, the results of which were 77 per cent, with the use of cater, and about the same without the use of water. The care was soft

thereaghly dried, with the following results: Trash from three-foller mill weighed 121 lbs., dried it weighed 81 lbs.; from two-roller mill weighed 8 lbs.; from two-roller mill grinding, weighed 14 lbs., dried it weighed 8 lbs.; from two-roller mill by granding weighed by ibs., dried it weighed 8) ibs. This shows that he trash from the three-rolls dried out of its own weight 52.8 per cent. Trash from the two-roller mills, wet grinding, dried out \$2.8 per cent. Trash from two-roller mill, dry grinding, dried out \$5.1 per cent. Approximately, the gain by wet grinding was I per cent, in amount of juice.

They say they usually obtain from 3 to 4 per cent, more by maceration than by dry grinding at the Wainken mill; and when the came is hard

the gain reacties as high as 8 per cent.

The double mill at the Kohala plantation, lately crected, has com-Plantation a d Mechanics' Tools menced grinding on dry, hard rations. The juice extracted by the two-nonext a constraint of the property of th show that the two-roller mill extracts from 23 to 26 per cent, additional ONE SPLENDID PIANO, Juice by measuration, and from 17 to 171 per cent, with dry grinding, the difference between amountains and dry granding being from 6 to 9 per cent in layer of miceration.

It would appear from the above statements that the gain from macera-

The figures furnished as by the Walakea mill appear to show that there has been no loss by converting crystallizable into invert sugar, from the use of water in the trash.

The results of grinding in 1884, before the maceration mill was erecfed, and of 1885 with maceration, stand as fellows; Crop 1884, juice 10 | B., 1000,2 lbs. to the clarifier, dry grinding; actual sugar in juice of above lensity, 1113 lbs. - Crop 1885, Juice SJ B., 864 lbs. to clarifler, maceration; actual sugar in juice of that density, 935 lbs.

The Newell cane-shredder, erected last year on General Warmouth's plantation, Louisiana, is attracting some attention. On this plantation they have obtained as high as 82 per cent, of Juice with the use of the shredder, and General Warmouth says it will give the best mills an increased extraction of 12 per cent.

The idea is not new, Bonelin, of Mauritius, invented a machine in 1877 for shredding cane before it passed through the mill; and years before that, others had invented machines for the same purpose. The Newell shredder may, however, be an improvement.

in regard to clarifying juice, we strongly recommend the use of round ottom clariflers or defacators as they are commonly called. In these defecators the juice is not skimmed, and the meltings are brought down to a small compass in the oval shaped bottom, in drawing them off. When the jules has been entirely drawn off, a cock is opened that lets the settilings out readily, it does not have to be scraped out, as is the case with our square bottomed clarifiers. These defecators are heated either by a steam jacket or steam coll. They are erected largely in Louislana and other sugar countries, and it is strange that they have not been adopted

The use of salicylic acid to prevent the fermentation of Juice has been tried on several plantations here, but with indifferent results. This acid which requires a large amount of water to dissolve it properly, should be

are much more easily and quickly handled. We do not see any special benefit to be derived from the use of carbonic acid gass in connection with the mud press-in fact its use has been discontinued on a great many plantations. In cleaning the juice, Hawalian planters are certainly beliad other progressive sugar countries. This is due parily to the fact that our sugar is not allowed to go into the United States stury free above No. 15 D. S., moreover, all cur product goes to the refineries, and we do not aim at a light quality of sugar. Still sugar polarizes lighter for being properly cleaned, and we should take more pains and improve in this direction. One part foreign substance destroys two parts cristalizable sugar-We think it has been clearly demonstrated, that Julea cleans much better after it has been reduced in the double effect to 25° B., or more, than immediately after the christer. Col. Spalling has adopted this method with good results. He cleans his juice both before and after it has been reduced to syrup, and although his sugars could not be called light in color, they polarize from I to I] per cent. Ligher when cleaned in this way. We have adopted this method at Hamakuspoko, Maul, and although we have not as yet given it a thorough trial, the results are good: For the benefit of those who have not looked into the matter, we would say that after the Juliar has been reduced to syrup, the foreign substances which then are lighter than the syrup, rise more readily to the surface on the application of heat, than when the juice is light, and before it is re-

It is an undoubted fact that the melasses now run to waste contains a very large proportion of sugar, generally from 30 to 50 per cent. In the ordinary practice of manufacture there is from every ton of sugar a residue of from 12 to 20 gallons of waste molasses weighing from 150 to 220 pounds and containing from 50 to 125 pounds of sugar, aggregating say from 25 to to 65 tous of sugar on a crop of 1,100 tons.

The question arises, can we prevent this loss? It is doubtful whether

cont.; water, 25 per cent.; invert sugar, 15 per cent; ash organic matter, etc., 20 per cent. The reason we do not obtain the 40 per cent, of cane sugar is that the invert sugar, ash and organic matter prevent crystaliza-tion, and until we succeed in withdrawing some of this invert sugar and foreign matter, we shall not be able to seems this crystalizable sugar. in that condition to be dried, as all practical planters know. It can certainly be passed through a mill, and be used as fuel; and this would seem to be the only practicable way that the water could be extracted so as to render it of use for fuel. The question is, will it be of sufficient value as fuel to warrant the expense of an extra mill, and the extra fuel able for our needs and circumstances. able for our needs and circumstances.

single sheet of parehment paper between and you have the essential idea of the Osmose press. The theory is simply that of diffusion, the parehment paper constitutes the cell wall through which the soluble impurities pass into the water with greater facility than the sugar thus leaving the molasses comparatively purified and ready for recristalization. A number of these sells, 50 or 100, placed side by side constitute a press, and are so arranged that the molasses enters at one end and the water at the other and travel side by side in opposite directions to the outlet.

we will for the benefit of those it may interest, give the result of a few

In the Plantens' Monthly of January, 1884, C. Moller, in an article entitled a Different Methyds in Sugar Bailing," advocated cone grade-builing,"—that is, builing the moiasses in with the jules and making one grade of sugar, instead of three or four grades. Mr. Moller's expe

At Himokuspoko, Masi, a careful experiment of this was made last February. The result was as follows: 500 clarifiers; Julee 10° Bc; yield 748 tos. to chariffer; not return \$37.45 per charifier. 340 clarifiers; Julee 10.2° B.; yield 758 ibs, to charifier; net return S. F. 837.28 per charifier, 2001 charifiers; Juice 10.5° B.; yield 772.0 lbs. to charifier; net return S. F. 857.98 per charifier. Charifiers contained 480 imperial gallons. The above is a little in favor of three grade boilings but the result is very close. When the sugar-boiler understands one grade bailing thorougally, the result will be fully as good and better than in three grade bailing,

but it takes more steam, as the pan has more granulating work.

Another experiment at Hamakuapoko was to ascertain the best time to grand cane after it had tasseled. The question arose whether there was not ordinarily as much sugar in the case two months after it had baseled as there was at a later period in this region. 2,000 lbs. case were ground Feb. 6, 1885, three months after it had tasseled, when the cane was still rather green, and 2,000 lbs. were ground from the same piece again on July 9, 1885, when the cane was quite ripe, with the following results: It would be right to say that the yield per charifler was not obtained from the 2,000 lbs. only, but from several days work at that time. Feb. 6, 1885, ground 2,000 lbs, cane, 105 lb., Juice extracted 71.9 per cent.; the green trush weighed 562 lbs; the trush dried weighed 251 lbs; yield per ciarifler of 489 imp. galls., 799 ibs. July 9, 1885, 2,000 ibs. cane ground, 10.75° B., juice extracted 70.4 per cent.; the green trash weighed 502 lbs.; the trash dried weighed 505 lbs. The above showed a gain in the yield per clarifier July 9, of 45.32 lbs. But there was a loss July 9, of 14 per cent, of the whole weight of cane in juice, or 2 per cent, loss of the 

Deducting this we have actual gain July 9...... In submitting this report, we would express our regrets that we have not been able to obtain more facts and material for making up a report from other plantations. Several planters have been written to, but none

have responded.

Respectfully Yours, H. P. Baldwin, Chairman. J. M. LYDGATE.

## REPORT OF COMMITTEE ON VARIETIES OF CANE.

tion differs avording to the nature of the cane, the use of water to so urate the trush aving of more benefit when the cane is hard than when it is soft. This is quite natural. Hence the value of masseration will undoubtedly vary in different localities, and with different kinds of cane, Sins.—The object for which this committee was appointed is to gather all the information obtainable about varieties of sugar cane, particularly new

and according to whether the trush furnished by the mill is sufficient to do all the work without the use of coal. Each mill-owner will have to decide the problem for himself.

The figures furnished us by the Walakea mill appear to show that there chairman of this committee: "I therefore believe that every planter "should prepare himself for any emergency, by having a few acres of "some other well selected varieties planted every year to serve for seed in the event of failure of the Lahalna cane from the sudden development of some new borer or blight."

With a view of obtaining only reliable information to lay before you, circulars have been sent to several planters, who were known as having taken an interest in the canes Imported by Mr. Theo. H. Davies, the original plants of which are now in the Government Nursery, in charge of Mr. Jaeger, who has shown much interest in the cultivation and distribution of them over this group, and which are certainly worth a visit from

In response to those circulars, several replies have been received. Mr. R. A. Macfie, Manager of the Kilauea Plantation, Kauai, writes:—" In 1882, we obtained from Australia some seeds of the varieties known there o as the Black Java. Meera, and Oboe. Since that date, I have grown these varieties alongside the Lahaina cane, both on poor soil with bone meal, and on good soil without manure. On poor soil none of the varieties have grown as well as the Lahaina cane, but on the good soil they have done better, and equal Lahaina in number of stalks per stool, and in length of joints; the stalks, however, are smaller than those of the Lahaina. cam sorry that I cannot give any comparison of density or polarization of juice which would be of value. Nor can I pronounce a decided opinion "as to which of these varieties has done best; but perhaps the Meera "stools have done better than the others. We have not had any 'Elephant ' cane growing here."

Mr. Edward Hoffmann, Manager of East Maul Plantation, located at Makawao, some 1,500 feet above the sea, writes under date of September 20th:—In answer to your question regarding my experience with the "Queenstand canes planted by me, I will state, that of the fourteen different varieties planted here, I can only mention three that I consider "worth trying on uplands, and these are the Elephant, Black Java, and "tred striped cane". The latter resembles very much in growth and color "the 'Tablit cane." Up here the 'Elephant cane seems to out to best of table and be irrigating it once a month. I bound this cane to outerword. "all, and by irrigating it once a mooth, I found this cane to out-grow all "others. At a growth of seventeen months, I have had a stalk of it that "weighed 151 pounds, without the top, and that measured over thirteen "feet of grinding cane. I doubt very much whether the Juice is equal in "quality to that of the Lahaina, and am inclined to believe it comes nearer to that of the Kokea which, as is well known, stands lower in density, under ordinary circumstances.

Regarding the "Red Luhaina cane," referred to in last year's report of the Committee on Varieties of Cane, and which was discovered as a new variety by the chairman of this committee while residing at Kealwa, Kan, in 1879, nothing farther has been ascertained as to its value as a profinable cans for cultivation, excepting that it still gives promise of being one of the best for upland cultivation. Mr. D. Foster, manager of the Pahala Plantation, has now several acres of it planted at an elevation ofb ween 1600 and 1800 feet above the sea, near the Lyman homestead; and in reply to late inquiries made by your committee, speaks very favorably regarding its appearance and growiff as an upland cane. About April of 1886 he expects to grind the first crop from it, when an opportunity will be afforded to ascertain its value as compared with Lahaina cane, from which it is believed to have originated, and very closely resembles in growth and quality of juice. This cane has been distributed during the present year on two plantations in Hamakan, Hawali, and one on Maul. As an example of its prolificness, it may be stated that from six bills of the red Lahama 224 stalks of first rations, five months old, and from six to seven feet long, were cut for seed, filling fifteen sacks. Another year will probably enable us to report more fully on this new variety.

Under date of September 13th, Mr. C. H. Spencer, of Hilea, Kan, Hawaii, sends us the following communication and list of canes cultivated on his place, which will be valuable information for every planter:

"I send you herewith a list of the different varieties of cane grown on

this plantation. Those from Queensland deserve special mention. The "Big Elephant and Otaneate, I believe, will prove as great a blessing on "our nigh hands as the Lahaina has on our low lands. They average respectively 38 4-10 sticks to the hill. Both varieties have long joints and large sticks. It is the finest cane I have ever seen. I got the seed from Mr. W. G. Irwin in July, 1884, and it was planted on the 20th. The seed being dry, it was a long time before it sprouted. I cut it (for seed) on the sin instant, and the average length of the sticks was nearly eight feet. We have now about three acres planted with these "canes, and, if nothing happens, it will be a field that will cheer one's "soul in a year hence to gaze upon."

LIST OF DIFFERENT VARIETIES OF SUGAR CANE GROWN IN HILEA SUGAR PLANTATION, EAU, HAWAIL.

1. \* Unia-lobu.-This cane grows well on uplands, Reddish green with a bloom on the Joints,

2. \* Unta-much.-This cane grows well on uplands. Reddish green with a bloom on the joints. Pulant, Grows targe with but few sticks in the hill. Striped,

known in Manritins as Bourisio cane.
4. Homania.—Fair Red (dark.) \* Laukona.-A good eating cane and that is all. White with green

6. Kanlo,-Hardy cane. Dark red with green stripes. Lahaina, Tais came was taken to Lahaina by Capt. Pardon Edwards from the Marquesas Islands in a whaleship.
 Ko-kea. This came is awaiting the burial service. White. The

Labaina cane has driven this one off the track, Mikini. A good cane. Light red and green stripes. How. A good cane. Light red and yellow stripes.

Alunhen-halill.-One of our best canes. Dark red and green stripes, 12. Aimiksa-matoli. - One of our best canes. Light and and green stripes.

\* Papa, Of little account. Dark red-short jointed. Manuele. Fair quality. Purple and brown stripes.
 Aperple. Fair quantity. Light green with dark green stripes.
 Partie.—A poor cane with us. Dull red and purple stripes.

Ohia.—A good cane, dark red, the most inside is white.

Irwini.—A hardy cane. Like the Hou, but has larger joints and darker leaves. Chlos or Cabas.-Yields well on rich moist land. White-came

We have also seventeen varieties of cane from Mauritius, but as the labels got mixed we are unable to give them their proper names. Three of these cames, viz.; two white and one striped grow well and ration well.

Rose Bamboo.-From Queensland. Rose color, with joints from 6 to 8 Big Elephant.-From Queensland. Dark red with light green Joints. Otoneate.-From Queensland. This cane is blood red, and white on the inside, with long joints.

Green Caledonia.-From Queensland. White: All the canes from Queen-land are growing here exceedingly well.

Canes in the list marked with a \* are indigenous to these islands.

Your committee are satisfied that the subject referred to in their report . is one which will, each year, not only possess increasing interest and importaines, but one also which every planter who rightly estimates the value of having under cultivation the best varieties of case saited to his locality and surroundings, will assist in studying and in communicating the results of his experience for the benefit of others. If we succeed in developing even one variety as well adapted to our high lands as the Libraton came is to our low lands, the present sugar product of Hawaii may in time be doubled. Let our efforts be continued in this line of search, realously and perseveringly, and though we ourselves may derive no benefit from the discovery, our successors may reap the reward of our

In closing this report, it gives us pleasure to refer to the greatly improved cultivation of our came fields noticeable everywhere the present year. Those of us who can recall their appearance twenty years ago, when hare spots and small cane were seen in almost every cane field, and now witness the evenness of the growing cane, and the absence of barren spots and yellow stantod cane, will not wonder at the large returns which will swell our total outcome for 1855 to over 80,000 tons of sagar. Wasa the late Ezra Cornell (the founder of Cornell University in New York State), was asked, on his return from a visit to England, what he considered the secret of the success of the English farmers, he answered: The thoroughness of their cultivation and the evenness of their crops. So long as our planters adhere to this rule of thorough work, they may expect and will meet success.

The increase in our sugar crop for 1885 is not due so much to increased area of land planted, as to greater care in cultivation, which results in more abundant crops and a heavier yield.

AND TOUTES FINE

H. M. WHITNEY, Chairman, H. P. BALDWIN.

STOVE COAL

tators, and all were crowded to their nimest capacity. Besides these, almost everything that could first, from the large coasting club course.

Stapleton, S. I., and sent over the regular time was forty-eight hours, seven minutes requires three or four horse power to drive and fifty seconds. The outward run was it, will cool 300 gallons of water a minute.

disserved in alcohol. Thus disserved its use will be more potent.

The iron mud presses made at the Honolulu Iron works, and also imported from Europe, are more substantial than the wooden presses, and

we can entirely prevent it but we may do so partially.

Ordinary waste molasses consists approximately of cane sugar, 40 per

I magine the ordinary filter press so constructed that the alternate chambers may coulain, the one water and the other molasses, with a

With such a press it is asserted that all the sugar may be obtained from the molasses, but as in diffusion of cane there is a point of practical ex-traction beyond which it does not pay to go. We understand that this